

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,035,790 B2  
APPLICATION NO. : 09/866596  
DATED : April 25, 2006  
INVENTOR(S) : Jebu Jacob Rajan

Page 1 of 6

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

ON TITLE PAGE AT ITEM (56) FOREIGN PATENT DOCUMENTS

"JP 2001/044926 2/2001" should read --JP 2001-044926 2/2001--.

ON TITLE PAGE AT ITEM (56) OTHER PUBLICATIONS

Page 1, "Numerical Recipes in C by W. Press, et al., Chapter 7, Cambridge University Press (1992)." should be deleted.

Page 2, (first occurrence) delete:

"Reversible jump Markov chain Monte Carlo Computation and Bayesian model determination" by Peter Green, Biometrika, vol. 82, pp. 711-732 (1995).

"The Simulation Smoother For Time Series Models", Biometrika, vol. 82, 2, pp. 339-350 (1995).

"Probabilistic inference using Markov chain Monte Carlo methods" by R. Neal. Technical Report CRG-TR-93-1, Department of Computer Science, University of Toronto (1993).

"Fundamentals of Speech Recognition," Rabiner, et al., Prentice Hall, Englewood Cliffs, New Jersey, pp. 115 and 116, 1993.

"Bayesian Separation and Recovery of Convolutively Mixed Autoregressive Sources", Godsill, et al., ICASSP, Mar. 1999.

"Statistical Properties of STFT Ratios for Two Channel Systems and Application to Blind Source Separation", Balan, et al., IEEE Proc.-Vis. Image Signal Process., vol. 44, No. 4, Aug. 1997, pp. 429-434.

Bayesian Approach to Parameter Estimation and Interpolation of Time-Varying Autoregressive Interpolation of Time-Varying Autoregressive Processes Using the Gibbs Sampler, Rajan, et al., TEE Proc.-Vis. Image Signal Process., vol. 44, No. 4, Aug. 1997, pp. 249-256.

"An Introduction to the Kalman Filter", Welch, et al., Dept. of Computer Science, University of North Carolina at Chapel Hill, NC, Sep. 1997.";

After "Bayesian Separation and Recovery ..." (second occurrence): "Autoregressive" should read -- Autoregressive--;

After "Rajan, et al.,": "Bayesian" should read --"Bayesian--; and "Sampler," should read --"Sampler", "--.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

COLUMN 2

Line 14, "sion," should read --sion;--.

COLUMN 4

Lines 31-37, " $e(n) = s(n) - a_1s(n-1) - a_2s(n-2) - \dots - a_k s(n-k-1)$ " "

$$e(n-1) = s(n-1) - a_1s(n-2) - a_2s(n-3) - \dots - a_k s(n-k-1)$$

$$e(n-N+1) = s(n-N+1) - a_1s(n-N) - a_2s(n-N-1) - \dots - a_k s(n-k-N+1) \quad (5)$$

should read

$$--e(n) = s(n) - a_1s(n-1) - a_2s(n-2) - \dots - a_k s(n-k) \quad --.$$

$$e(n-1) = s(n-1) - a_1s(n-2) - a_2s(n-3) - \dots - a_k s(n-k-1)$$

$$e(n-N+1) = s(n-N+1) - a_1s(n-N) - a_2s(n-N-1) - \dots - a_k s(n-k-N+1) \quad (5)$$

COLUMN 6

Lines 4-6, " $p(s(n)|a, k\sigma_s^2) = p(e(n)) \left| \frac{\partial e(n)}{\partial s(n)} \right|_{e(n)=s(n)-Sa}$ " "

should read

$$-- p(s(n)|a, k, \sigma_s^2) = p(e(n)) \left| \frac{\partial e(n)}{\partial s(n)} \right|_{s(n)=s(n)-Sa} \quad --.$$

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

COLUMN 7

Line 29, " $(\underline{a}_a)$ ," should read --  $(\underline{\sigma}_a^2)$ , --;

Line 37, " $\underline{a}_a$ ," should read --  $\underline{\mu}_a$ , --;

Line 38, " $p(\underline{a}_a)$ " should read --  $p(\underline{\mu}_a)$  --;

Line 41, " $(\underline{a}_a)$ " should read --  $\underline{\mu}_a$  --;

Line 44, " $p(\underline{a}_a)$ " should read --  $p(\underline{\mu}_a)$  --; and

Line 45, " $\underline{\mu}_a$ " should read --  $\underline{\mu}_a$  --.

COLUMN 8

Line 15, " $(\underline{a}_h)$ ," should read --  $(\underline{\sigma}_h^2)$ , --;

Line 23, " $p(\underline{a}_h)$ " should read --  $p(\underline{\mu}_h)$  --;

Line 29, " $p(\underline{a}_h)$ " should read --  $p(\underline{\mu}_h)$  --;

Line 30, " $\underline{a}_a$ " should read --  $\underline{\mu}_a$  --;

Line 37, " $\alpha h d$ " should read --  $d_h$  --; and

Line 67, " $\underline{h}, r, \sigma_a^2, \sigma_h^2, \sigma_e^2, s(n) | \underline{y}(n)$ " should read

--  $\underline{h}, r, \sigma_a^2, \sigma_h^2, \sigma_e^2, s(n) | \underline{y}(n)$ : --.

COLUMN 9

Line 9, " $p(\underline{a}, k | \underline{h}^1, r^1, \sigma_e^{2^1}, \sigma_h^{2^1}, s(n)) \rightarrow a^2, k^2$ " should read

--  $p(\underline{a}, k | \underline{h}^1, r^1, \sigma_e^{2^1}, \sigma_h^{2^1}, s(n)^1, ) \underline{y}(n)) \rightarrow a^2, k^2$  --.

COLUMN 10

Line 20, " $a$ " (both occurrences) should read --  $\underline{a}$  --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

COLUMN 11

Lines 58-59, " $\hat{\alpha}_a = \frac{N}{2} + \alpha_a$  and  $\hat{\beta}_a = \frac{2\beta_a}{2 + \beta_a \cdot (a + \mu_a)^T (a - \mu_a)}$  (29)" should  
read --  $\hat{\alpha}_a = \frac{N}{2} + \alpha_a$  and  $\hat{\beta}_a = \frac{2\beta_a}{2 + \beta_a \cdot (a - \mu_a)^T (a - \mu_a)}$  (29) --.

COLUMN 12

Lines 3-4, " $\hat{\alpha}_h = \frac{N}{2} + \alpha_h$  and  $\hat{\beta}_h = \frac{2\beta_h}{2 + \beta_h \cdot (a + \mu_h)^T (a - \mu_h)}$  (30)" should  
read --  $\hat{\alpha}_h = \frac{N}{2} + \alpha_h$  and  $\hat{\beta}_h = \frac{2\beta_h}{2 + \beta_h \cdot (h - \mu_h)^T (h - \mu_h)}$  (30) --;

Line 8, " $(\sigma_h^2)^g$  ." should read --  $(\sigma_a^2)^g$  .--; and

Lines 54-55 " $MO = \max \left\{ \frac{p(a_{<1:k_2>}, k_2 | \dots)}{p(a_{<1:k_2>}, k_1 | \dots)}, 1 \right\}$  " should read

--  $MO = \max \left\{ \frac{p(a_{<1:k_2>}, k_2 | \dots)}{p(a_{<1:k_1>}, k_1 | \dots)}, 1 \right\}$  --.

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COLUMN 13

Line 2, "a" (third occurrence) should read --  $\underline{a}$  --;

Lines 59-64, " $\tilde{A} = \begin{bmatrix} a_1 & a_2 & a_3 & \cdots & a_j & 0 & \cdots & 0 \\ 1 & 0 & 0 & \cdots & 0 & 0 & \cdots & 0 \\ 0 & 1 & 0 & \cdots & 0 & 0 & \cdots & 0 \\ \vdots & & & \ddots & & & & \\ 0 & & & & & 1 & 0 & \end{bmatrix}$ " should read

$$\tilde{A} = \begin{bmatrix} a_1 & a_2 & a_3 & \cdots & a_k & 0 & \cdots & 0 \\ 1 & 0 & 0 & \cdots & 0 & 0 & \cdots & 0 \\ 0 & 1 & 0 & \cdots & 0 & 0 & \cdots & 0 \\ \vdots & & & \ddots & & & & \\ 0 & & & & & 1 & 0 & \end{bmatrix} \quad \text{--}$$

COLUMN 14

Line 26, "equal" should read --equal to--.

COLUMN 15

Line 11, " $\underline{a}(t) \sim N(0, C(t))$ " should read --  $\underline{n}(t) \sim N(0, C(t))$  --;

Line 15, " $\underline{r}(t-1) = \underline{hd}(t)^{-1} \underline{w}(t) + L(t)^T \underline{r}(t) - V(t)^T C(t)^{-1} \underline{a}(t)$ " should read

$$\underline{r}(t-1) = \underline{hd}(t)^{-1} \underline{w}(t) + L(t)^T \underline{r}(t) - V(t)^T C(t)^{-1} \underline{n}(t) \text{ --};$$

Lines 19-20, " $\underline{z}(t) = \alpha_r^2 \underline{r}(t) + \underline{a}(t)$  where

$$\underline{z}(t) = [\underline{z}(t) \underline{z}(t-1) \underline{z}(t-2) \cdots \underline{z}(t-r+1)]^T \text{ ,}$$

should read

$$\underline{\tilde{z}}(t) = \alpha_r^2 \underline{r}(t) + \underline{n}(t) \text{ where}$$

$$\underline{z}(t) = [\underline{z}(t) \underline{z}(t-1) \underline{z}(t-2) \cdots \underline{z}(t-r+1)]^T \text{ --; and}$$

Line 24, " $\underline{a}(t)$ " should read --  $\underline{n}(t)$  --.

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COLUMN 20

Line 58, "the" (first occurrence) should be deleted.

COLUMN 29

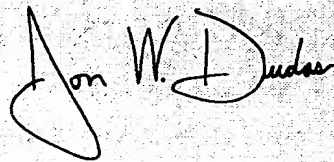
Line 61, "mode" should read --model--.

COLUMN 33

Line 16, "speech" should read --a speech--.

Signed and Sealed this

Twentieth Day of March, 2007

A handwritten signature in black ink, reading "Jon W. Dudas". The signature is written in a cursive style with a large, stylized "J" and "D".

JON W. DUDAS  
*Director of the United States Patent and Trademark Office*